



25 July 2022

**Ms Anthea Harris
Chief Executive Officer
Energy Security Board**

Dear Ms Harris

Energy Security Board – Capacity mechanism high-level design paper

A proudly Australian company with balance sheet strength, Fortescue Metals Group (Fortescue) is a global leader in large-scale, ultra-efficient and highly complex developments with a proven track record in developing and operating assets in remote and isolated locations. Fortescue has a strong focus on decarbonisation, evidenced by its industry leading target to achieve carbon neutrality by 2030.

Through its subsidiary, Fortescue Future Industries (FFI), we are establishing a global portfolio of green hydrogen production and manufacturing projects and operations that will position us at the forefront of the global green hydrogen industry. FFI welcomes the opportunity to provide comment on the Energy Security Board's (ESB) consultation on the capacity mechanism high-level design paper. FFI supports the ESB's intent to design and implement a capacity mechanism to support the energy transition across the National Electricity Market (NEM) through providing a capacity investment market signal. FFI agrees that this is a necessary mechanism to send the right investment signals to ensure a smooth transition from thermal generation to renewables firming with dispatchable capacity and demand response.

FFI broadly supports the proposed principles outlined in the design paper and supports the continued work to proceed to a more fulsome capacity market design, noting that there are many policy decisions that remain before we can provide full judgement on the effectiveness of a capacity mechanism in the NEM. For a capacity mechanism to become a successful instrument in managing the NEM, FFI believes it is critical that it achieves two outcomes:

- It must send clear investment signals to investors that new capacity is required and provides a strong incentive to prompt investment
- It must support the long-term decarbonisation transition occurring in the NEM

Sending clear signals to encourage significant new investment in dispatchable capacity from generation and/or demand side response is critical to underpin the development of renewable energy resources. Renewable energy generation investment is critical to meet both NEM reliability and to maintain price reductions as traditional thermal plants are retired either on schedule or ahead of schedule. Dispatchable generation sources, such as pumped hydro storages, will be fundamental to ensuring the risks of long-term wind and solar droughts can be managed.

FFI strongly believes that demand response will be an integral form of capacity across the NEM and supports its inclusion in the capacity mechanism as a form of firm capacity. Over the short (1 to 4 year) and medium (4 to 8 year) terms, FFI is seeking to develop both small/medium



(megawatt scale) and large (gigawatt scale) green hydrogen projects to support our global target of 15 million tonnes of green hydrogen production by 2030. A material portion of that target will be produced by facilities that are connected to the NEM and, with the right incentives to do so, will be able to be operated flexibly bringing reliability and price benefits to the NEM through active management of our loads.



Figure 1 – Active response from electrolyzers supporting reliability and price reductions in the NEM

Figure 1 above shows a simplified example of how a green hydrogen production facility can be operated to respond to market signals and rapidly reduce consumption. This will also release contracted renewable energy capacity into the market, improving reliability and driving spot price peaks back down. Internal FFI modelling leveraging NEM dispatch data and price sensitivity suggests that a 500 MW green hydrogen project operated this way can provide annual net-benefits to a region of around \$500 million. However, for the market to access these benefits the market signals and structures need to be configured to first incentivise investment in these projects (with the right capabilities) and then encourage their operation in a way that is mutually beneficial to the market and the operator.

FFI believes that a capacity mechanism is one form of incentive that will support the development of demand response technologies that can provide the above-mentioned benefit. A further benefit to enabling these technologies is that the financial output of the project is not entirely dependent on the energy market due to their nature as energy loads. The production of hydrogen for domestic and export markets is the primary output of these developments, meaning that capital payback is not entirely tied to the capacity market and energy market payments. However, to operate flexibly and forego green hydrogen production, the market signals must be right to allow first mover developers and operators establishing these large-scale demand response technologies to share in the benefits they create.

The second outcome the mechanism must achieve is it must be designed to provide long-term benefit and reduce risk, this requires that it supports, smooths, and hastens the decarbonisation of the NEM. To achieve Australia’s climate and renewable energy goals, the electricity system must do



the heavy lifting, or the nation risks achieving little in decarbonising other key industrial sectors that rely on the electricity system to function.

FFI strongly supports the ESB and Ministerial principles recognition of the need for the capacity mechanism to support continued emissions reductions across the NEM States. Building-in emissions reduction will be a critical but complicated design factor for the capacity mechanism, noting all States, Territories and the Commonwealth have their own targets for emissions reductions across all sectors and separate renewable energy targets for their electricity grids.

Supporting this process will require detailed consideration of the best possible way to meet both renewable energy targets and carbon budgets allocated under emissions reduction goals. For example, the capacity mechanism must factor in the Commonwealth's target to reach 82% renewable energy in the NEM by 2030 and at the same time consider Tasmania's target of 200% renewable energy by 2040. Other States currently, or will have, their own targets that will need to factor into renewable energy capacity goals that the mechanism must support.

Similarly, in line with the stated principles to continue emissions reduction, the capacity mechanism must consider the varied approach to emissions reduction in each State. At a high level, FFI suggests this must consider the Commonwealth's 43% reduction by 2030 as the economy-wide 2030 reduction floor and net-zero by 2050 as the long-term goal of the mechanism. The Commonwealth's plan to legislate its 2030 and 2050 targets presents an opportunity to set this floor and provide certainty to the market. However, with the ACT State Government setting their reduction goal as net-zero by 2040, how each State's goal is factored in will be important, so they have the required capacity to achieve their respective targets.

One such method of meeting the emissions reduction goals of each State would be to set out carbon budgets within the mechanism for each State that both aligns with emission reduction targets and considers their renewable energy targets. The ESB has noted this is one option that they are open to considering as part of the design for the mechanism. FFI supports the introduction of a carbon budget as it would provide the Australian Energy Market Operator (AEMO) with firm guidance for the continued emissions reduction of the electricity sector. However, the carbon budget should not be exclusively tied to a capacity mechanism; the operational energy production must also be considered. Considering operational energy production will protect the integrity of the carbon budgets if, for example, a state government was to opt out of the mechanism.

To assist the ESB, the remainder of our submission will make comments on the high-level principled approach to the capacity mechanism design.

Who is eligible?

FFI supports current generation and demand response capacity being eligible to participate in the capacity mechanism. Excluding this may incentivise perverse market behaviour, such as closing and reopening plants to be eligible for capacity payments. We also strongly support a State or Territory Government's discretion to exclude carbon generation from being eligible for the mechanism, particularly considering their emissions commitments and potential carbon budget.



We feel this is a fundamental feature of the mechanism and without it the value to the market and therefore industry's support materially changes.

There is a clear need to manage the retirement of the existing thermal fleet to maintain reliability while the energy transition occurs, however we suggest that this is best done through alternative options such as the earlier proposal for orderly exit management contracts (OEMC) to be struck between each state and the asset owner. Such alternatives can ensure that these generators can be maintained and operated efficiently to supply into the NEM while they are still needed. Once sufficient new renewable supply has entered the market, these agreements can shift towards the planned retirement.

FFI does not support the option for State or Territory Governments to opt out of the capacity mechanism altogether for their jurisdiction. This may create perverse outcomes in the market where level playing fields for competing generators aren't supported and individual state targets are contravened. FFI strongly believes it is important to ensure that the NEM operates, as best as possible, on the same framework.

The degree of forecasting and procurement

FFI supports the proposed approach for AEMO to forecast the required capacity to give all Governments the confidence that sufficient capacity will be available when required. There is a minor risk in this approach where AEMO may be overly cautious as the market operator and overestimate the forecasted required capacity, in turn, increasing costs. We suggest this a very minor risk and can be managed through appropriate independent checks and stakeholder consultation. Further, the risk of over-contracting is far less a risk than the risk of under-contracting through the mechanism, as evidenced by the recent period of instability in the NEM. FFI believes that AEMO should be encouraged to ensure a sufficient response to meet the requirements and with enough redundancy to manage both scenarios of typical operations and unforeseen circumstances.

The nature of the obligation placed on capacity providers in return for a capacity payment

FFI supports strong penalties being applied as a significant deterrent to failing to comply with capacity requirements under the mechanism. Given the market consequences of failing to deliver, the penalties must substantially outweigh the benefits of engaging. Proponents should only offer services they are confident of delivering when most needed. Unplanned outages or unresponsive generators are an unavoidable reality of any power market. Such events however should attract a severe penalty to encourage the requisite maintenance to avoid such outages as far as practicable.

FFI suggests careful consideration is needed when designing the obligations placed on supply-side generation versus the expectations and penalties placed on demand response providers. While the speed and quality of capacity provided by demand response will be reliable, flexible loads will need to be operating at full capacity to provide the demand response. Situations where a green hydrogen facility has already ramped down in response to market prices or as part of general production will need to be considered and forecasted.



The derating for scheduled loads will require careful consideration to ensure that capacity forecasts and available capacity meets the needs of the market operator. However, FFI suggests that flexible industrial loads like green hydrogen plants, typically operating at full load should not be subjected to derating as they can ramp down in response to the right signals to free up their load capacity to provide firm market capacity. A 100MW green hydrogen load that can be ramped down to zero is at least as effective as a scheduled generator providing the same response, if not a better response due to speed of response to dispatch instructions.

Thank you for the opportunity to comment on this consultation and for the opportunity to nominate an FFI representative to participate on the technical working group for the development of the capacity mechanism. If you would like to discuss any of the issues raised in this submission or to arrange a briefing, please contact Tom Parkinson, FFI at tom.parkinson@fmgl.com.au .

Yours sincerely

Nick Berry
Manager Government Relations
Nick.Berry@fmgl.com.au
FORTESCUE FUTURE INDUSTRIES